



United States Department of the Interior

GEOLOGICAL SURVEY

Office of the District Mining Supervisor
Conservation Division
2040 Administration Building
1745 West 1700 South
Salt Lake City, Utah 84104

U-024316

To Gil
Jim
File: CEP/015/002

March 18, 1981

Mr. Cleon Feight
Division of Oil, Gas, and Mining
1588 West North Temple
Salt Lake City, Utah 84116

Dear Mr. Feight:

Northwest Carbon Corporation has proposed an addendum to its Tie Fork Drilling Program on Federal coal lease U-024316. Enclosed you will find a copy of the addendum.

If you have any questions or if your representatives wish to attend the onsite inspections please contact Gerry Lebing or me.

Sincerely yours,

Jackson W. Moffitt

Jackson W. Moffitt
District Mining Supervisor

Enclosure

RECEIVED
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**DIVISION OF
OIL, GAS & MINING**

March, 1981

EXPLORATION PLAN

Submitted by Northwest Carbon Corporation
for Crandall Canyon

CRANDALL CANYON

1. The following people are responsible for operations under the plan described below, and notices and orders should be delivered to anyone of them:

E. Peter Matthies, Vice President	(801) 534-3559;
Al Amundson, Chief Engineer	(801) 534-3329;
Wayne W. Hall, Senior Geologist	(801) 534-3698; and
Catherine V. Chachas Environmental Engineer	(801) 534-3470,

all with address at;

Northwest Carbon Corporation
P.O. Box 1526
Salt Lake City, Utah 84110

The area which is the subject of this exploration plan is owned by the State of Utah with applicant having a lease.

2. The following description pertains to the area where exploration is to be conducted and to the potential effect of applicant's operation:

(i) GEOLOGY

The tracts of interest are located in Section 2, T15S R6E, and in Section 36, T16S R6E. This land is generally located west of the Huntington Creek Canyon. The north portion of the property is on a steep canyon wall with slopes of up to 60% incline. The remaining portion consists of more gentle terrain varying from flat to approximately 20% incline.

The Hiawatha coal bed outcrops north and east of the property with an approximate thickness of 5-11 feet. It is expected that the overburden will reach 2,000 feet toward the west end of Section 31. From the description of the existing environment, as given in the Final Environmental Statement for Central Utah, coal should be found in alternating shale and sandstone beds of the lower 1/3 of the Black Hawk formation. The 1,000 feet thick Starpoint sandstone formation lies below the Blackhawk. There are major faults to the west of the property, however, no significant structural breaks have been found on the property.

The Hiawatha Seam which rests on the Starpoint Sandstone is the primary coal property of interest. On the basis of outcrop investigation, coal thickness ranges from 3 to 10 feet. The rock immediately overlying the Hiawatha Seam appears to consist of interbedded shales, sands, and minor coals.

(ii) HYDROLOGY

Crandall Canyon is an east-west trending drainage of approximately 5.8 square miles. The main stem of Crandall contains a perennial stream flowing west to east, and four intermittent/ephemeral tributaries which flow from south to north. Flow measured by Hansen (1977)¹ at a point just upstream from the confluence with Huntington Creek was found to be 0.5 cfs (cubic feet per second) during May and June of 1977. Total dissolved solids at this same point were found to be 450 mg./l (milligrams per liter) with slightly lower values upstream.

From a cursory inspection of records at the State Engineers office, there are no known water rights currently in effect in the Crandall Canyon drainage.

There is no direct knowledge of ground water conditions in Crandall Canyon, however, drill hole data in drainages to the south would suggest that little or no ground water is likely to be encountered. A major spring does exist on the tributary situated in Section 1, but flow and quality data on this spring are not currently available.

Because the proposed drilling will be done in areas accessible by upgrading existing roads, there is not expected to be any impact on the stream as a result of road building or drill site preparation. No ground water aquifers are known to exist and therefore no impacts are possible.

Drilling is being done by air rotary and/or air foam methods such that if significant ground water is encountered the zone is readily identifiable and procedures could be quickly implemented to avoid any disturbance.

(iii) VEGETATION

There are five major vegetation communities in the general area to be explored:

- Douglas fir (Pseudotsuga menziesii) forests are found on steep slopes of northerly exposures.

- Aspen (Populus tremuloides) stands occur at higher elevations on slopes of gentle to moderate relief of various exposure.

- Montane sagebrush (Artemisa tridentata) occurs at higher elevations on moderate to steep slopes of open exposure.

- Mixed conifer-Mountain shrub is found on steep slopes of a general northerly exposure and is dominated by Douglas fir and true mountain mahogany (Cercocarpus montanus).

¹Water quality and Hydrologic study in Vicinity of Huntington Creek Mine No. 4 and Little Bear Spring, Prepared for Swisher Coal Company, August 1977, Vaughn Hansen & Associates.

-Mixed conifer occurs primarily on steep slopes of southerly aspect. Pinyon pine (Pinus edulis), Utah juniper (Juniperus osteosperma) and curlleaf mountain mahogany (Cercocarpus ledifolius) predominate in the overstory whereas Salina wildrye (Elymus salina) prevails in the sparse understory.

(iv) TERRESTRIAL and AQUATIC WILDLIFE

According to Dalton et al., 1978, Species list of vertebrate wildlife that inhabit southeastern Utah, UDWR Pub. 78-16, the biogeographic region within which exploration will occur provides habitat for fourteen species of fish, six species of amphibian, nineteen species of reptile, two hundred forty two avian species and eighty mammals. Among the more economically and/or aesthetically important wildlife species in the specific area of exploration are: elk (Cervus elaphus), mule deer (Odocoileus hemionus), cougar (Felis concolor), bobcat (F. rufus), black bear (Ursus americanus), coyote (Canis latrans), forest grouse, snowshoe hare (Lepus americanus), mountain cottontail (Sylvilagus nuttallii) and a variety of raptorial species. Two endangered species have the potential of occurring in the general area, those being the bald eagle (Haliaeetus leucocephalus) and peregrine falcon (Falco peregrinus). In the realm of aquatic beota, Crandall Creek is a small perennial stream which is not classed as a salmonid fishery nor does it support known fish populations (Dalton, L.B., Resource Analyst, UDWR, personal communication, March 10, 1981).

(v) PRESENT LAND USE

The area to be explored lies within the Manti-La Sal National Forest and is characterized in large part by natural vegetation which provides grazing land for domestic livestock during late spring and summer as well as habitat for a variety of wildlife species. The major industrial use of land in the general area is coal mining. No commercial timber harvesting is being conducted in the Crandall Canyon area.

3. The following description concerns the exploration operations to be conducted by applicant on the land under application.

(i) Method of Exploration and Types of Equipment to be Used

The proposed exploration will consist of drilling two holes in Section 36 T15S R6E and three holes in section 2 T16S R6E, as shown on the attached map.

The holes will be drilled from the surface to the depth of the underlying sandstone. At least one hole will be core-drilled from approximately 200 feet above the coal-bearing member to the underlying sandstone member, and a geophysical log will be taken on that hole. The remaining holes will be plug-drilled and logged geophysically. The expected depth of all holes is approximately 2,000 feet.

Equipment will consist of one or more truck-mounted drill rigs, water trucks, and pickup trucks. Access roads will be built using a D-8 caterpillar or its equivalent.

(ii) Prevention of Damage to the Environment

For fire prevention, each rig, water truck, and pick-up truck will be equipped with a fire extinguisher. Drilling sump water will also be used in the event of a fire.

Soil disturbance will be kept to a minimum and all disturbed areas will be graded in such a manner that excessive soil erosion will be minimized. For the most part, existing access roads into the area will be used. Construction of additional roads for the proposed exploration operations will be kept at a minimum, as shown in the attached map.

Surface waters that run across the disturbed areas will be diverted into the sump used for drilling operations. This will prevent waters crossing the disturbed area from entering into natural drainages. No ephemeral, intermittent, or perennial streams will be diverted during these exploration activities. In the event ground water were encountered during drilling activities, the natural cementing of the drilling operation would keep drilling muds from contaminating it. All aquifers encountered will be cemented off as each hole is plugged upon completion of drilling.

The only significant air-born emissions from the exploration operation will be amounts of suspended particles and fugitive dusts created by traffic on access roads. Travel on these roads will be intermittent and activities are not expected to create significant amounts of particulate matter. Most dust particles will be large enough to rapidly settle out of the atmosphere. Since most drilling operations will be using water as a drilling medium, no significant amount of dust will be released.

Significant impact on natural wildlife is not expected, because most roads are already existing and only two small access roads are planned. The drilling location is remote from any populated area or controlled public activities so that no hazard to public health and safety will exist. As explained above, no fish habitat is present in the vicinity.

(iii) Plugging of Drill Holes

All drill holes will be plugged in accordance with USGS standards. Cutting will be disposed of down the hole or scattered. The entire length of the hole will be plugged with cement. All aquifers will therefore be cemented off and each side of the water-bearing zone.

(iv) Surface Reclamation

Immediately following the completion of drilling activities and plugging of drill holes, the disturbed land area will be reclaimed in accordance with surface mining regulations. The drillsites will be back-filled to conform with the surrounding terrain, water barred where necessary, tilled with shovels or portable roto-tillers to loosen the soil, and reseeded with the mixture specified by the authorized officers. Slash material pushed aside during clearing

operations will be scattered over the area; debris will be hauled away. Topsoil will be stockpiled prior to operations and replaced during reclamation. Where the area is steep, it will be terraced to prevent deterioration of the soil prior to the re-establishment of vegetation. Planting will be done by the broadcast method for grasses and undergrowth-type vegetation. Shrubs, if necessary, will be planted by starter plants.

TIMETABLE

Drilling operations are expected to begin as soon as possible during the summer of 1981. Accessibility to the area after snow-melt and spring drainage will determine start-up. Operations are presently anticipated to last approximately four months. Construction of additional access roads could begin in late June or mid-July after sufficient drying of the surface. D-8 caterpillar work will be done in such manner that unnecessary erosion of the soil from continual spring and early summer runoff will be avoided. Completion of operations is expected by December, 1981. If postponement is necessary, work will be completed during the spring of 1982.

TOPOGRAPHIC MAPS

The attached map shows topographic and drainage features within the property. No bodies of water are known to exist.

ADDITIONAL INFORMATION

The area has not been surveyed for cultural, paleontological, or the known site specific determinations. During access road construction, drilling, and drillsite establishment, general surveys will be conducted to assure that no existing cultural locations are destroyed.

The major source of impact on terrestrial fauns will result from surface disturbance and increased human activity. Increase in human activity and vehicular traffic in the area will result in the harassment of a variety of wildlife species, such as deer, small mammals, and birds. The relatively small amount of surface disturbance will make these impacts minor. Due to the remote location of the drillsites, very few people will view the operations.

Adverse environmental effects will be short in duration. Dust, noise, personnel, and vehicular traffic will be intermittent, and will have little effect on plant and animal life. Soil disturbances will be minimal and all disturbed areas will be properly graded and/or reseeded. The activity will be monitored by inspections, and adverse environmental effects reduced as much as possible. The remoteness of the drillsite locations will minimize public irritation.

There are no alternatives to the proposed plan. If the coal is to be mined, additional information is required to develop mining plans. Exploration by drillhole methods is necessary to determine existence, thickness, and quality of coal, and to investigate the overburden rock structure for use in mine planning. Drilling will cause the least adverse environmental effect of known exploration methods, including shaft sinking and trenching.